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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/034,388	12/28/2001	Luying Sun	POLICE 3.0-001	8729

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LERNER, DAVID, LITTENBERG,  
KRUMHOLZ & MENTLIK  
600 SOUTH AVENUE WEST  
WESTFIELD, NJ 07090

EXAMINER
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CANTELMO, GREGG

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 12/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/034,388

Applicant(s)

SUN, LUYING

Examiner

Gregg Cantelmo

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 1-13 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 14-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3-5. 6) ☐ Other:

## **DETAILED ACTION**

### ***Preliminary Amendment***

1. In response to the preliminary amendment received February 25, 2002:
  - a. The amendments to the specification have been entered. Applicant states that no new matter has been entered in the preliminary amendment regarding the changes made therein.

### ***Election/Restrictions***

2. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1-10, drawn to a microporous membrane, classified in class 210, subclass 500.22.
  - II. Claims 11-13, drawn to a method of making a microporous membrane, classified in class 156, subclass 264.
  - III. Claims 14-20, drawn to a battery, classified in class 429, subclass 249.

The inventions are distinct, each from the other because of the following reasons:

3. Inventions I and III are related as mutually exclusive species in an intermediate-final product relationship. Distinctness is proven for claims in this relationship if the intermediate product is useful to make other than the final product (MPEP § 806.04(b), 3rd paragraph), and the species are patentably distinct (MPEP § 806.04(h)). In the instant case, the intermediate product is deemed to be useful as a stand alone membrane or a microporous membrane in other devices such as gas sensors and the

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inventions are deemed patentably distinct since there is nothing on this record to show them to be obvious variants. Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions anticipated by the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

4. Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product can be made by other processes such as molded porous plastics absent any pore former as required in claim 11.

5. Inventions II and III are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the membrane of the battery can be made made by other processes such as molded porous plastics absent any pore former as required in claim 11.

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6. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

7. Because these inventions are distinct for the reasons given above and the search required for Group II is not required for Groups I or III, restriction for examination purposes as indicated is proper.

8. Because these inventions are distinct for the reasons given above and the search required for Group III is not required for Groups I or II, restriction for examination purposes as indicated is proper.

9. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

10. During a telephone conversation with Mr. Patrick Higgins on October 30, 2003 a provisional election was made with traverse to prosecute the invention of Group III, claims 14-20. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-13 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

***Information Disclosure Statement***

11. The information disclosure statements filed February 25, 2002 and November 18, 2002 have been placed in the application file and the information referred to therein has been considered as to the merits.

***Drawings***

12. The drawings received December 28, 2001 are acceptable for examination purposes.

***Claim Rejections - 35 USC § 102***

13. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

14. Claim 14 is rejected under 35 U.S.C. 102(b) as being anticipated by U.S. patent No. 5,290,645 (Tanaka).

Tanaka discloses a battery comprising a positive electrode, negative electrode, electrolyte and porous separator membrane wherein the membrane comprises a microporous sheet and an adhesive therein (col. 12, ll. 25-33 as applied to claim 14).

15. Claim 14 is rejected under 35 U.S.C. 102(b) as being anticipated by JP 60-136161-A (JP '161).

JP '161 discloses a lithium battery comprising a positive electrode, negative electrode, electrolyte and porous separator membrane wherein the membrane comprises a microporous sheet and an adhesive therein (abstract as applied to claim 14).

16. Claims 14 and 17-20 are rejected under 35 U.S.C. 102(b) as being anticipated by EP 352617-A (EP '617).

EP '617 discloses a lithium ion battery comprising a positive electrode, negative electrode, electrolyte and porous separator membrane wherein the membrane comprises a microporous sheet and an adhesive therein (abstract, page 2, ll. 9-11 and 29-44; [age 4, Table II and lines 31-33 as applied to claim 13).

The battery is a lithium ion battery and thus the positive electrode is a lithium-ion positive electrode (page 3, ll. 22-23 as applied to claim 17).

The battery is a lithium ion battery and thus the negative electrode is a lithium-ion negative electrode (page 3, ll. 19-21 as applied to claim 18).

The battery is a lithium ion battery and thus the electrolyte ode is a lithium-ion electrolyte (page 3, ll. 14-18 as applied to claim 19).

The battery is a lithium ion battery electrolyte is a liquid lithium ion electrolyte or polymer lithium ion electrolyte (page 3, ll. 14-18 as applied to claim 20).

17. Claims 14 and 16-20 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. patent No. 5,993,954 (Radovanovic).

Radovanovic discloses a lithium ion battery comprising a positive electrode, negative electrode, electrolyte and porous separator membrane wherein the membrane comprises a microporous material and the second polymer material is a melt polymer (abstract, and col. 9, ll. 45-60 as applied to claim 13).

A filler is further added to the separator mixture (col. 7, ll. 24-26 as applied to claim 16).

The battery is a lithium ion battery and thus the positive electrode is a lithium-ion positive electrode (col. 9, ll. 45-60 as applied to claim 17).

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The battery is a lithium ion battery and thus the negative electrode is a lithium-ion negative electrode (col. 9, ll. 45-60 as applied to claim 18).

The battery is a lithium ion battery and thus the electrolyte ode is a lithium-ion electrolyte (col. 9, ll. 45-60 as applied to claim 19).

The battery is a lithium ion battery electrolyte are known in the art as being either liquid lithium ion electrolyte or polymer lithium ion electrolyte (col. 9, ll. 45-60 as applied to claim 20).

18. Claims 14 and 17-20 are rejected under 35 U.S.C. 102(b) as being anticipated by EP 1043796-A (EP '796).

EP '796 discloses a lithium ion battery comprising a positive electrode, negative electrode, electrolyte and porous separator membrane wherein the membrane comprises a microporous sheet and an adhesive therein (abstract as applied to claim 13).

The battery is a lithium ion battery and thus the positive electrode is a lithium-ion positive electrode (abstract and paragraph [0003] as applied to claim 17).

The battery is a lithium ion battery and thus the negative electrode is a lithium-ion negative electrode (abstract and paragraph [0003] as applied to claim 18).

The battery is a lithium ion battery and thus the electrolyte ode is a lithium-ion electrolyte (abstract and paragraph [0003] as applied to claim 19).

The battery is a lithium ion battery electrolyte is a liquid lithium ion electrolyte or polymer lithium ion electrolyte (abstract and paragraph [0009] as applied to claim 20).



***Claim Rejections - 35 USC § 103***

19. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Radovanovic in view of U.S. patent No. 4,985,317 (Adachi).

The teachings of claim 14, with respect to Radovanovic have been discussed above and are incorporated herein.

The difference between claim 15 and Radovanovic is that Radovanovic does not teach of adding a tackifier.

Adachi teaches that it is known to add tackifiers to the microporous membrane to improve the adhesion of the separator membrane to the adjacent electrodes.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Radovanovic by adding a tackifier to the microporous membrane since it would have improved the adhesion of the separator membrane to the adjacent electrodes.

20. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over EP '617 in view of U.S. patent No. 4,985,317 (Adachi).

The teachings of claim 14, with respect to EP '617 have been discussed above and are incorporated herein.

The difference between claim 15 and EP '617 is that EP '617 does not teach of adding a tackifier.

Adachi teaches that it is known to add tackifiers to the microporous membrane to improve the adhesion of the separator membrane to the adjacent electrodes.

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Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of EP '617 by adding a tackifier to the microporous membrane since it would have improved the adhesion of the separator membrane to the adjacent electrodes.

21. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over EP '796 in view of U.S. patent No. 4,985,317 (Adachi).

The teachings of claim 14, with respect to EP '796 have been discussed above and are incorporated herein.

The difference between claim 15 and EP '796 is that EP '796 does not teach of adding a tackifier.

Adachi teaches that it is known to add tackifiers to the microporous membrane to improve the adhesion of the separator membrane to the adjacent electrodes.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of EP '796 by adding a tackifier to the microporous membrane since it would have improved the adhesion of the separator membrane to the adjacent electrodes.

### ***Double Patenting***

22. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

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A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

23. Claims 14-16 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-19 of U.S. Patent No. 6,527,955 (Sun). Although the conflicting claims are not identical, they are not patentably distinct from each other.

Sun claims a battery (claim 2) which inherently comprises a positive electrode, negative electrode, electrolyte, and separator which is porous to the electrolyte to permit ion transfer. The membrane comprising a hot-melt adhesive, an engineering plastics, a tackifier and a filler (claim 2) as applied to claims 14-16.

24. Claims 17-20 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-19 of U.S. Patent No. 6,527,955 (Sun) in view of U.S. patent No. 5,993,954 (Radovanovic). Although the conflicting claims are not identical, they are not patentably distinct from each other.

Sun claims a battery (claim 2) which inherently comprises a positive electrode, negative electrode, electrolyte, and separator which is porous to the electrolyte to permit ion transfer. The membrane comprising a hot-melt adhesive, an engineering plastics, a tackifier and a filler (claim 2) as applied to claims 13-16.

The differences between claims 17-20 and the claims of Sun are that Sun does not claim the particulars the battery.

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Radovanovic teaches that microporous membranes having an adhesive melt resin is a suitable and preferable separator useful in lithium ion batteries (as discussed above and incorporated herein).

The particulars of the battery are drawn to the use of the membrane, that membrane being claimed in Sun. Thus given the teachings of Sun's claims in view of the disclosure of Radovanovic one of ordinary skill in the art would have found it obvious to use the separator of Sun in a lithium ion battery arrangement as discussed in Radovanovic since it would have provided means for separating the electrodes from each other but permitting ionic conductivity of the electrolyte across the separator.

25. Claims 14-20 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-5 of U.S. patent application publication No. US 2003/0152828 (Sun '828). Although the conflicting claims are not identical, they are not patentably distinct from each other.

Sun '828 claims a battery comprising a positive electrode, negative electrode, electrolyte and a microporous membrane having a hot-melt adhesive, engineering plastics, tackifier and filler (claim 1 as applied to claims 14-16).

The positive electrode is a lithium ion positive electrode (claim 2 as applied to claim 17).

The negative electrode is a lithium ion negative electrode (claim 3 as applied to claim 18).

The electrolyte is a lithium ion electrolyte (claim 4 as applied to claim 19).

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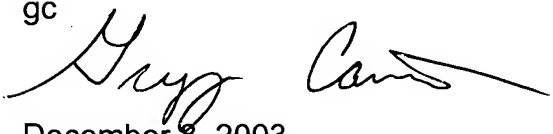
The electrolyte is a liquid lithium ion electrolyte or polymer lithium ion electrolyte (claim 5 as applied to claim 20).

**Conclusion**

26. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregg Cantelmo whose telephone number is (703) 305-0635. The examiner can normally be reached on Monday through Thursday from 8:00 a.m. to 5:30 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan, can be reached on (703) 308-2383. Note that these telephone numbers will change around January 1, 2004. At such time the examiners new telephone number will be (571) 272-1283 and the examiner's supervisor's number will be (571) 272-1292. FAX communications should be sent to FAX number: (703) 872-9306. FAXES received after 4 p.m. will not be processed until the following business day. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Gregg Cantelmo  
Patent Examiner  
Art Unit 1745

gc

A handwritten signature in black ink, appearing to read "Gregg Cantelmo", is written over the typed name and date.

December 8, 2003

# **Examiner-Initiated Interview Summary**

**Application No.**

10/034,388

**Applicant(s)**

SUN, LUYING

**Examiner**

Gregg Cantelmo

**Art Unit**

1745

**All Participants:**(1) Gregg Cantelmo.(2) Mr. Patrick Higgins.**Status of Application:** \_\_\_\_\_

(3) \_\_\_\_\_

(4) \_\_\_\_\_

**Date of Interview:** 30 October 2003**Time:** \_\_\_\_\_**Type of Interview:**☒ Telephonic☐ Video Conference☐ Personal (Copy given to: ☐ Applicant ☐ Applicant's representative)Exhibit Shown or Demonstrated: ☐ Yes ☐ No

If Yes, provide a brief description:

**Part I.**

Rejection(s) discussed:

Claims discussed:

Prior art documents discussed:

**Part II.****SUBSTANCE OF INTERVIEW DESCRIBING THE GENERAL NATURE OF WHAT WAS DISCUSSED:**

*A restriction requirement was presented to Applicant's representative as appears on the record with Applicant's representative elected Group III, claims 13-20 with traverse*

**Part III.**

- ☐ It is not necessary for applicant to provide a separate record of the substance of the interview, since the interview directly resulted in the allowance of the application. The examiner will provide a written summary of the substance of the interview in the Notice of Allowability.
- ☒ It is not necessary for applicant to provide a separate record of the substance of the interview, since the interview did not result in resolution of all issues. A brief summary by the examiner appears in Part II above.

(Examiner/SPE Signature)

(Applicant/Applicant's Representative Signature – if appropriate)